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ABSTRACT

Preplanning to insure sex-fair evaluation of student performance in physical education should include: (1) establishment of instructional and performance objectives for each activity; (2) development of performance standards which take into account ability levels and documented biological differences between the sexes; and (3) a well-defined formative and summative evaluation system, which is criterion-referenced. These preplanning measures, drawn from a review of literature about sex-fairness in physical education, reflect conclusions that: (1) Studies fail to provide substantial evidence as to whether sex differences are real or perceived; (2) Gender differences exist in normative data for physical fitness and sport skill tests; and (3) Criterion-referenced performance tests provide the most unbiased approach. To achieve sex-fair evaluation, program objectives should be related to physical fitness, skill movements, and integration of skills. Students should be given sufficient time to develop a minimal degree of competency on an individual basis. Daily or weekly task cards, which state criteria of acceptable performance so that the student has immediate and meaningful feedback, may be useful. Use of a contract would expedite recording skills completed and would let students assume some responsibility for determining feasible goals. Letter grades could be determined from the percentage of tasks completed which meet the criteria. The use of task cards relates to formative evaluation, while the contract serves as the summative evaluation. (Author/JD)

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A Conceptual Approach to Sex-fair Performance Evaluation

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AN ABSTRACT: A CONCEPTUAL APPROACH TO SEX FAIR PERFORMANCE EVALUATION

Barbara J. DeLong

The current literature does not provide substantial evidence as to whether sex differences in performance are biological or psychosocial. There is clear indication that gender differences do exist in the normative data for physical fitness and many sport skill tests. The current literature suggests that criterion-referenced measurement provides the most unbiased approach to sex fair evaluation.

To insure sex fair evaluation of student performance each teacher must have a commitment to extensive preplanning. This should include: (1) establishment of instructional and performance objectives for each activity in the program, (2) development of performance standards which take into account ability levels and documented biological differences between the sexes, and (3) a well-defined formative and summative system of evaluation which is criterion-referenced.

The program objectives should be related to physical fitness, skill movements and integration of skills. Depending on the age level and whether the program is required or elective, weightings for the categories would vary. In any case, the student should be given sufficient time to develop a minimal degree of competency on an individual basis. This can be accomplished through the use of daily or weekly task cards which state the criterion of acceptable performance so that the student has immediate and meaningful feedback.

The use of a contract would expedite recording skills completed and letting the student assume some responsibility for determining feasible goals. The contract could be developed on a pass/no credit basis or the assignment of a numerical value to each task. For either situation, letter grades would be determined on a percentage of tasks completed which meet the criterion. The use of task cards relates to formative evaluation while the contract serves as the summative evaluation.

A CONCEPTUAL APPROACH TO SEX FAIR PERFORMANCE EVALUATION

Barbara J. DeLong

Introduction

"Although Title IX legislation does not necessarily require coeducational classes, attention to ability grouping and performance standards is essential". (9:295) Sex-fair performance evaluation came to the forefront in 1974 with the implementation of Title IX. A review of recent literature suggests that we have barely begun to address the issue. The preponderance of material available describes "what is" rather than what "should be" with respect to sex-fair performance standards.

A conceptual approach to the problem, therefore, seems a valid hypothesis for looking to the future by providing a beginning point to develop suitable measures for evaluating both sexes. In looking at the problem, however, is it really much different than the traditional problem of fairly evaluating students of the same sex? The question of fair evaluation has always been a controversial issue within our profession. If for no other reason, the impact of Title IX has caused us to reexamine how we evaluate student performances in physical education.

Review of Literature

In reviewing the literature pertinent to sex-fair evaluation it was necessary to address the issue of real and perceived differences between the sexes. There was some indication that the differences between the sexes is psychosocial rather than purely physiological. The review of literature for this paper took into account (1) physiological and psychological sex differences, (2) standards of performance, and (3) criterion-referenced approach to evaluation.

> Many physical educators believe that differences in attributes such as strength and cardiorespiratory efficiency are physiologically based rather than culturally orientated. This assumption may be supported by future research, but there is insufficient evidence to substantiate it at the present time (Safrit, 1978). (9:296)

An article in QUEST, 1980, provided an excellent overview of the issues about gender differences. Pertinent highlights of the article included:

1. The norms for the AAHPER Fitness and Sports Skills Tests indicate that boy's performance is superior to girl's but as athletic opportunities increase for girls, the normative data should be monitored.
2. There are differences in body structure and composition; for activities which involve arm strength, females are at a disadvantage.
3. There is documented evidence that gender differences exist with aerobic capacity; this has an implication for distance running.
4. True gender differences do exist for performance but there is still a question about whether these differences are strictly biological. (10:158-161)

A study reported by Mikkelson (1979) gave an insight into student perceptions about coed physical education but not specifically about gender differences. In answer to the general questions of (1) "do you feel that you are good at sports" and (2) "do you feel comfortable engaging in sports activities with the opposite sex", girls' attitudes were generally more positive than boys'. Both sexes were enthusiastically in favor of ability grouping but wanted to be graded on effort rather than ability. Students favoring coed gym wanted it thoroughly coed including both sexes playing by the same rules. Students also expressed concern about teachers' attitudes toward integrated classes. (7:63-64).

One might conclude that students' feelings are more of a psychosocial nature. Teachers' perceptions of students' feelings reported by DeLong (1980), yielded similar

findings in that almost three-fourths of the teachers surveyed indicated that students' attitudes about coed physical education were comfortable to great. The same study also revealed that the majority of teachers had a high degree of satisfaction in teaching coed classes.

The meager amount of current research describing sex differences suggested that there is an open door for one who is interested in studying gender differences with respect to physical performance. There were, however, a substantial number of performance tests which show the differences in performance of boys and girls. A survey of the literature in this area gave an overview of the types of performance standards that are available.

Conclusion of a study by Stamm (1980) on the performance differences between sexes in a bowling class indicated that:

> Gender differences were observed across all performance standards, as well as in the accuracy of the classification of masters and nonmasters. At the present time, separate performance standards should be used when this test is administered in coeduational classes. (11:367)

The current publications of the AAHPERD detailing physical fitness of youth clearly pointed out gender differences in performance. A sampling of those differences is included as follows:

Lifetime Health Related Physical Fitness
Comparison of 50th Percentile Scores for
14 year old Boys and Girls (3:23-35)

Test	Boys	Girls
One Mile Run (min/sec)	7:10	9:35
9 minute run (yards)	1956	1615
1.5 mile (min/sec)	11:29	16:57
12 minute run (yards)	2592	1861
triceps and subscapular skinfolds (mm)	14	24
triceps skinfold	8	23
sit ups (60 sec)	42	35
sit and reach (cm)	28	33

Youth Fitness Test
Comparison of 50th Percentile Scores
for 14 year old Boys and Girls (1:38-58)

Test	Boys	Girls	Combined Boys and Girls
Flexed arm hang (sec)	-	9	-
Pull ups	4	-	-
Sit ups (60 sec)	41	30	35
Shuttle run (sec)	10.1	11.0	10.5
Long jump (ft/in)	6'2"	5'4"	5'9"
50 yard dash (sec)	7.2	7.8	7.5
600 yard run (min/sec)	2'3"	2'40"	2'18"

Additionally numerous sports skill tests were described in the literature. Almost without exception these tests were devised for single sex evaluation and the norms developed accordingly. While the tests themselves may not be outdated, certainly the standards of performances would need to be carefully scrutenized if one were to apply these tests and norms to sex-integrated classes.

In a study conducted by DeLong (1980) in which 61 teachers responded to the question, "Do you use separate standards for boys and girls?", 39% answered yes, 54% answered no, and 7% yes and no. For those answering yes, the activities most frequently identified as having different standards were: fitness - 19; track and field - 10; gymnastics - 6; and basketball - 4. The actual practice of those teachers seemed to correlate with current practices described in the literature.

As one notes that there are differences in ability within the same sex, it is apparent that greater differences in ability within the same class will be observed with sex-integrated classes. The grouping of students by ability, then, becomes a crucial consideration; but how can this be achieved without losing valuable teaching time?

Arnold (1977) suggested that the means need not be complicated or sophisticated but that a common sense approach is usually adequate.

> For example, having a 110-pound girl compete with a 210-pound boy or girl in activities where collision is possible is neither educationally sound nor likely to be judicially permissible. Classifications could be based upon one or more valid determinants of performance, such as height and strength. (4:20)

He further described that objective performance standards be stated and that marks should reflect progress toward course objectives. "Comparing a student's performance to a single norm is permissible only where its application does not adversely affect members of one sex". (4:21)

Title IX has provided the impetus for individualized instruction and evaluation. Unfortunately, we are left with the dilemma of how to adequately accomplish this within the constraints of a physical education class.

The overriding question with respect to setting performance standards is, for what purpose will the results be used? If one is concerned primarily with assigning grades based upon performance standards, this is quite a different matter than if we are primarily concerned with providing the student with goals to achieve which lead toward individual improved performance.

One method for sex-fair grading was endorsed by Kirkendall, et al. These authors stated that:

> For purposes of grading, students will be classified according to sex and a pretest for each activity. There will be three initial ability categories for each sex in each activity. In some activities there may be additional classification on body weight since in some activities body weight is negatively related to performance..... Grades will be determined solely on the basis of physical performances and written tests. The weight of each will be indicated later for each activity. An anecdotal record on each student will be kept in order to identify students who may be having special problems. These records will not be used in the determination of student grades. In general, the following distribution of grades will be used for each of the six units.
>
> | | | |
> |---|---|---|
> | A--10% | C--45% | F--5% |
> | B--25% | D--15% | |
>
> Anytime a grade is assigned, consideration will be given for an individual student's circumstances. (6:410)

On the question of setting standards (regardless of the use made of results), there are several general methods which might be utilized:

> The regulations for the implementation of Title IX require the use of standards for measuring skill or progress in these classes which do not impact adversely on members of one sex. (12:68)

Suggestions for implementation advocated by Stamm (1979) included:

1. Using separate performance standards

   This has been the most common practice particularly when sex differences can be documented. It may be that the need for separate standards has been overestimated and that it perpetuates sex role stereotyping.

2. Grading on improvement

   This usually penalizes the skilled student and improvement scores are generally unreliable. There are many unresolved problems in using this method.

3. Mastery Learning Approach

   This has great potential for coed classes but there are problems of reliability, validity and setting mastery scores for the criterion-referenced measures. (12:68-69)

There seemed to be agreement that standards of performance can and should be set but there are some basic problems with setting standards and cut-off scores. "The most serious criticisms leveled at the use of standards are (a) they may be determined quite arbitrarily, and (b) the effect of misclassification may be profound." (10:154)

Three suggested procedures were given by Safrit, et al (1980) for setting standards:

1. The most widely used method for setting standards for motor performance has been judgemental. That is, a teacher or teachers

are asked to set standards for a particular group of students in a particular school.

2. Making judgments about mastery based on a sample of students by using border-line groups method or contrasting-groups method.
3. Use of criterion measures in setting standards can be used as an empirical approach. (10:156-157)

Criterion-referenced evaluation and/or a mastery model show promise as a means for sex-fair evaluation. This is a relatively new concept for physical educators even though the general approach has been available for a number of years.

> The mastery model has two important features: (1) The students are informed of the standards of performance at the beginning of a unit. Criterion-referenced rather than norm-referenced measures are used. (2) The students are allowed to vary the number of test repetitions for each skill, depending on individual need. Thus formative evaluation, which occurs continually throughout a unit, is emphasized over summative evaluation, where the administration of tests typically occurs at the end of the unit. (9:309)

The recent publication (1980) of the AAHPERD, BASIC STUFF SERIES, further suggested that as a profession we are beginning to develop a coherent approach to instruction and evaluation in physical education. The basic approach included student involvement in setting goals for performance as well as providing positive motivation for the student. The main components outlined include student involvement in: (1) determining and committing oneself to achievable goals, (2) encouragement of personal promises, (3) making students responsible for keeping a personal record, and (4) providing ample testing periods to check progress. (2:27-28)

The BASIC STUFF SERIES II ADOLESCENCE also included examples of contracts, task sheets, mid-term evaluation and final evaluation. The reader is encouraged to consult pages 80-83 for practical examples.

The challenges presented by Stamm (1977) at the Colorado Measurement Symposium seemed appropriate as we deliberate the current task of developing sex-fair performance

evaluation. She offered the following challenges for future exploration:

1. Develop methods for grouping students on the basis of performance.
2. Develop standards of performance which do not discriminate against either sex.
3. Develop methods for setting performance standards on an individual basis. (8:13)

Conclusions drawn from the review of literature include:

1. The literature reviewed failed to provide substantial evidence as to whether sex differences are real or perceived; whether differences are purely biological or in part physiosociological.

2. There was a clear indication that gender differences in performance exist in the normative data for tests of physical fitness and most sports skill tests.

3. There seemed to be enough information to make the assumption that criterion-referenced performance tasks provide the most unbiased approach for sex-fair performance evaluation.

The one remaining question still unanswered, however, is on what bases the criteria should be established and how we establish realistic cut-off scores for grading purposes.

Discussion of Evaluative Criteria and Weightings

This author is a proponent of a criterion-referenced approach to evaluation with contracts serving as a means for helping students achieve the desired goals. This commitment involves support of a formative-summative approach to evaluation. Since this paper deals only with the psychomotor domain, evaluative criteria and weightings will be related only to physical performance skills.

In order to establish performance standards one would first need to establish instructional and performance objectives for specific time periods of the instructional program. For example 2 weeks, 4 weeks, 6 weeks, etc. The goals should be established as a cooperative effort between teacher and students. As students gain skill in establishing goals, less teacher input should be necessary.

My proposal for sex-fair evaluation of student performance includes three general categories of activities: (1) physical fitness, (2) skill movements, and (3) integration of skills. The importance of each element will vary by grade level and whether the program is organized as a required or elective program.

Activities included in the physical fitness category would include: distance runs; sit-ups; sit and reach; pull-ups or flexed arm hang; shuttle run. Evaluation of skills related to physical fitness for which recognized norms are available for each sex could be accomplished by using the 50th percentile as the minimum of acceptable performance. If a differentiation beyond "average" is needed, one could quite easily use the 60th, 70th, etc. percentile scores as the evaluative criteria.

Activities identified as skill movements would include basic skills for each sport, individual activity or rhythmic activity included in the program. For example in tennis; accuracy and consistency for the forehand drive, backhand drive, service and lob.

Evaluation of skill movements presents a somewhat different problem than for physical fitness. While one might use the norms available for the AAHPERD or other sport skill tests, unless strength, height or body composition make it impossible to use a single standard, it seems that we should not continue using these scores on a whole-sale basis. For example, putting in golf involves accuracy and success is not dependent upon strength or body composition. On the other hand, success in shot putting is dependent upon strength and body mass. Therefore, each skill movement would need to be analyzed to determine what constitutes acceptable performance and whether or not there are significant gender differences which make separate standards necessary.

Activities suggested as integration of skills include the ability to perform the basic skills in a game situation, individual competition or total dance. For example, being able to execute the basic tennis skills in a game situation with enough consistency to win a reasonable number of games. Evaluation of this category would necessitate some subjectivity as well as recording game scores and games won.

Another question that arises when evaluating skill movement or integration of skills is that of proper form. Unless the form the student uses violates proper mechanical principles or makes the activity unsafe, I believe that we should not consider this in making judgements about skilled performance.

Teachers should use a common sense approach when setting sex-fair performance standards. I am not suggesting that valid and reliable standards are unimportant, but if we wait for "the experts" to develop standards, "the practitioners" will continue to do what they have always done. One should take into account known gender differences and develop standards which do not discriminate within or between the sexes.

Assuming that realistic goals/objectives have been established, a composite conceptual approach to evaluation of the psychomotor domain might be:

Required Program for 12 to 14 Year Olds	
Physical Fitness	25-35%
Skill Movements	50-65%
Integration of Skills	15-30%

Elective Program for 15 to 18 Year Olds	
Physical Fitness	15-30%
Skill Movements	15-30%
Integration of Skills	50-70%

The primary emphasis in the middle school through beginning high school would be on development of skilled movements for team, individual and rhythmic activities. This is crucial to the student's being able to integrate these skills for personal satisfaction in the activities. Since students are still in the growing stage, it also seems advisable to include a high emphasis on physical fitness to establish a pattern of fitness consciousness for later years.

The percentage of weightings for later high school grades would differ significantly in the emphasis placed on integration of skills. Assuming that the senior high student had been exposed to a broad range of experiences in the middle school, increased time would be given to putting skilled movements into situations that bring about personal satisfaction.

For the majority of teaching situations we tend to think in terms of units of instruction for a set number of days or six- or nine-week grading periods. This puts pressure on both the student and teacher to accomplish a given set of tasks within, usually, a relatively short period of time. In order to achieve sex-fair evaluation it becomes necessary to limit the competencies expected and set standards of acceptable performance low enough for all students to have a reasonable chance for success.

A developmental approach with emphasis on individual progress would appear to have merit IF grades did not have to be assigned at the conclusion of short periods of time. If a set of specified tasks could be completed within a school year, rather than small segments of time, then students could progress toward goals which have meaning for them and objectives which could be evaluated more fairly. Realistically, however, we must confine our efforts to fairly evaluating students within small segments of time.

For implementation of the examples given in this conceptual approach for either the required or elective program, a series of steps should be taken:

1. Teacher will develop general instructional goals for a unit of instruction.
2. Teacher will develop and inform students of minimal level of performance expected and acceptable.
3. Students, with teacher guidance, will develop their own goals and plan of action for attainment of the goals.
4. Teacher and students will develop a format (contract) for recording achievement; appropriate tasks and evaluative criteria will be developed and followed by student and teacher.
5. Students will be informed as to time schedule for completing tasks and being evaluated.
6. Students will be informed as to which tasks have met the minimum standards agreed upon.

Discussion of Applicability of Conceptual Approach

Application of the conceptual approach will be described for: (1) a small school with one or two teachers administering a required program [required = all students taking the SAME activities for the year] and (2) a large school with a minimum of five teachers administering an elective program [elective = all students required to take physical education but are given choices for activities during the year.]

The same general procedure could be used for both situations. Differences between the programs would presumably be class size, weightings for the activity components and opportunities for individualized learning. In both situations the emphasis is on student progress within the limits of their own capabilities and evaluation done in an unbiased manner. The following process should be applied:

A. Prior to the beginning of the school year the teacher(s) will:
   1. agree upon the instructional objectives, activities, major components of each activity, and time blocks for the year
   2. decide upon means for ability groupings within classes
   3. develop sex-fair performance standards for all activities
   4. prepare handouts for students describing the expectations

B. During the first week of school:
   1. discuss program requirements and expectations with students
   2. administer ability grouping tests for first semester activities (student will not necessarily be in the same ability group for all activities)
   3. after determining ability groups, teacher(s) will work with students to establish realistic goals and tasks for each student
   4. students are organized for instruction and participation by ability groups

C. During each unit of instruction:

1. students within each ability group are given daily or weekly task cards specifying the objectives and performance standards expected; student practice is organized in a station or circuit manner
2. teacher is available to give individual assistance to students; a specified time is set each day or week to check skills (primarily to provide formative evaluation)

D. At the conclusion of each unit:

1. a summative grade is determined based on the weightings applied to the categories of activities

Discussion of Applicability of Grading Systems

Use of the proposed conceptual approach suggests that both formative and summative evaluation are appropriate. In order to assign grades two approaches will be described: (1) formative: task cards and achievement of objectives and (2) summative: contract and point system.

The use of formative evaluation is based on the premise that objectives, tasks, and performance standards have been established prior to the beginning of the unit. It is further assumed that students are capable of accepting responsibility for attainment of goals.

Formative evaluation should occur daily to provide the student with feedback. This evaluation will not be used for grading purposes, but rather give the student a progressive sense of direction. It also provides a non-threatening atmosphere for improvement of performance. In order to provide meaningful feedback to the student: (a) the teacher should give verbal feedback about the performance and (b) the student will check off performance standards and objectives achieved as specified on the daily task cards.

Summative evaluation, for practical purposes, is equated with the assignment of grades. The effectiveness of this approach is contingent upon pre-determined criterion-referenced standards for either a contract or point system. A suggested contract system would include a combination of required and optional tasks. The student's grade would be based on the number of required and optional tasks completed which met the criterion-referenced standard. For example, to achieve a grade of "A" the student would have to meet the performance standard for all ten required tasks plus five optional tasks selected from a pool of items of varying difficulty. To achieve a grade of "B", the student would meet the standard of eight of the ten required tasks plus all five optionals, etc.

Another approach for using a contract would include assignment of letter grades to each required and optional task and the student would need to achieve x number of A's and B's, etc. For example, to achieve a summative grade of "A", the student would need to achieve an "A" on 12 of the 15 required tasks and a "B" on the remainder, etc.

A suggested point system could follow the same general plan outlined for a contract. The difference would be that completion of each task would be assigned a numerical value and a summative grade would be based on total points achieved. For example, if a total of 150 points is possible, to achieve a grade of "A", the student would need a total of 130 points. The other difference with the point system is that the student is working toward accumulating a total of 130 points rather than being required to specifically have x number of points from required and optional tasks.

The relationship between the formative and summative performance evaluation is:

1. The daily and weekly formative evaluation is the method used to

fulfill the contract or point system obligations; this should not be used alone if grades must eventually be determined.

2. Formative evaluation is intended to provide feedback and is used in conjunction with the contract on which summative evaluations are recorded.
3. The contract or point system could be used independently if the main concern is having a sex-fair grading system.
4. The use of task cards could be used independently if the main concern is student progress without the burden of having to assign grade.

Summary of A Conceptual Approach

To insure sex-fair evaluation of student performance, each teacher must have a commitment to extensive pre-planning. This should include: (1) establishment of instructional and performance objectives for each activity in the program, (2) development of performance standards which take into account ability levels and documented biological differences between the sexes, and (3) a well-defined formative and summative system of evaluation which is criterion-referenced.

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